

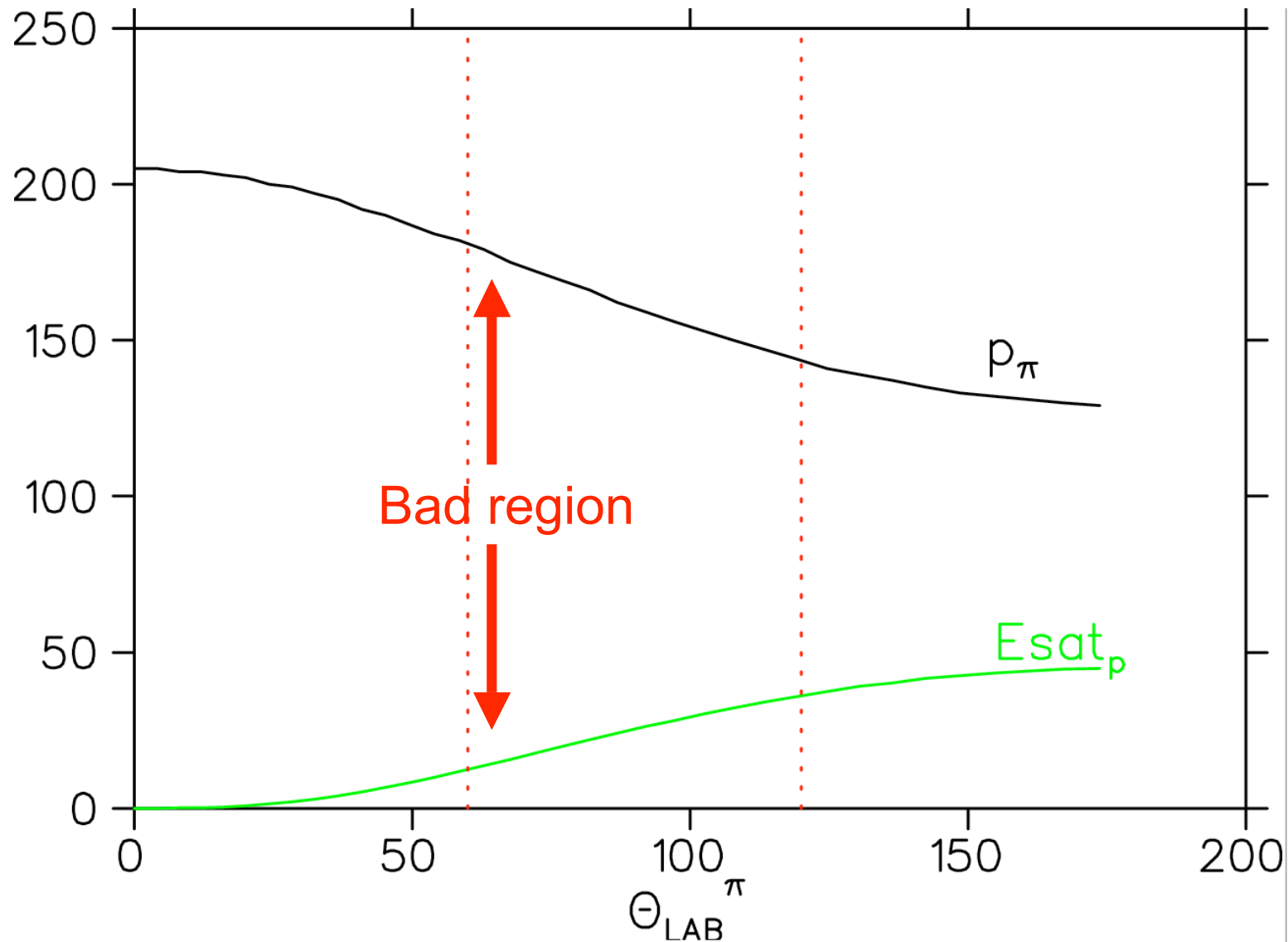
# Kinematic cut for $p_{nn}^2$

Can we make money with a cut  
against elastic scattering?

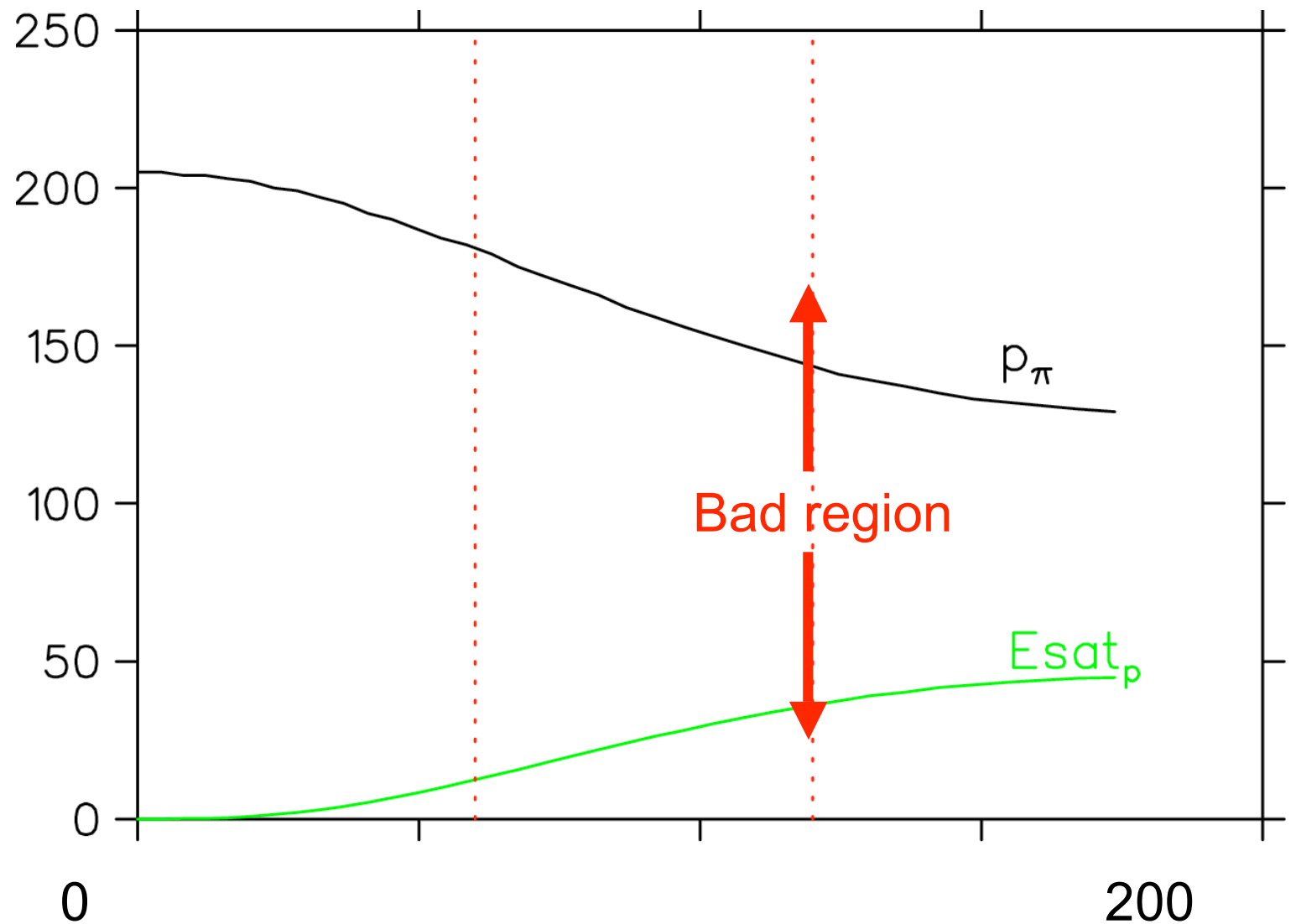
# The idea

- Problem is  $\pi^+$  heading US or DS & scattering
- To bother us must be elastic off proton or quasi-elastic.
  - Cut possible for former case
- Assume  $\pi^+$  going dead DS or US
- Then reln. between angle & momentum

# Kinematics of $\pi^+$ -p Elastics ( $\pi^+$ heading DS)



# Kinematics of $\pi^+$ -p Elastics ( $\pi^+$ heading US)



$\theta^*$	$\theta$	$p_\pi$	$\theta_p$	$p_p$	$t$	$Esat_p$
0	0.000	205	0.000	0	0.000	0.00
5	4.016	205	87.464	14	0.000	0.02
10	8.038	204	84.925	29	-0.001	0.08
15	12.068	204	82.388	43	-0.002	0.20
20	16.114	203	79.851	57	-0.003	0.43
25	20.178	202	77.316	71	-0.005	0.80
30	24.266	200	74.782	85	-0.007	1.34
35	28.384	199	72.250	99	-0.010	2.06
40	32.535	197	69.720	113	-0.013	2.98
45	36.725	195	67.192	126	-0.016	4.02
50	40.960	192	64.667	140	-0.019	5.33
55	45.243	190	62.144	153	-0.023	6.74
60	49.582	187	59.624	165	-0.027	8.20
65	53.980	184	57.107	178	-0.031	9.97
70	58.443	182	54.592	190	-0.036	11.75
75	62.976	179	52.081	202	-0.040	13.69
80	67.585	175	49.573	213	-0.045	15.61
85	72.276	172	47.069	224	-0.049	17.65
90	77.052	169	44.567	235	-0.054	19.82
95	81.920	166	42.069	245	-0.059	21.90
100	86.883	162	39.574	255	-0.064	24.09
105	91.948	159	37.083	264	-0.068	26.14
110	97.116	156	34.594	272	-0.073	28.03
115	102.393	153	32.109	281	-0.077	30.24
120	107.779	150	29.627	288	-0.081	32.02
125	113.277	147	27.147	296	-0.085	34.10
130	118.888	144	24.670	302	-0.089	35.71
135	124.609	141	22.196	308	-0.093	37.35
140	130.438	139	19.723	314	-0.096	39.02
145	136.371	137	17.253	318	-0.099	40.16
150	142.401	135	14.785	323	-0.101	41.60
155	148.520	133	12.318	326	-0.103	42.48
160	154.716	132	9.853	329	-0.105	43.36
165	160.978	131	7.389	331	-0.107	43.96
170	167.290	130	4.925	333	-0.108	44.56
175	173.636	129	2.463	334	-0.108	44.86
180	0.000	129	0.000	334	-0.002	44.90

# Kinematics



# Proposal

- Pick out events with energy near beam
  - E.g. inner ring of EC, collar, AD,  $\mu$ collar, etc
- Examine  $\pi^+$  angle vs momentum
- Examine target pattern
- See if a cut is justified